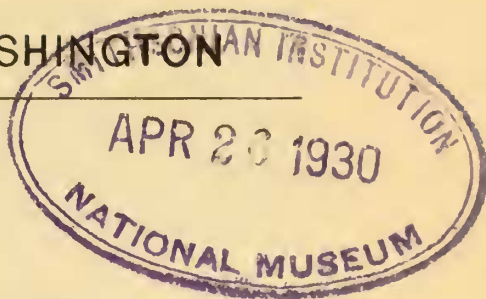


PROCEEDINGS
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KEY TO THE SPECIES OF *CLIVINEMA* WITH
DESCRIPTIONS OF SEVEN NEW SPECIES
(HEMIPTERA, MIRIDAE).¹

BY HARRY H. KNIGHT.

In working over material in the genus *Clivinema* Reuter it was found that several species are represented, with the result that a key for their separation is provided, also descriptions of seven new species. This brings the total number of known species in the genus up to ten. The writer is indebted to Mr. H. G. Johnston for testing out the key which he used successfully to identify all the species.

Clivinema medialis, n. sp.

Distinguished from all known members of the genus by the impressed median line on scutellum and median fuscous vitta on membrane.

♀. Length 4.6 mm., width across hemelytra 1.77 mm. Head: width .92 mm., vertex .56 mm. Rostrum, length 1.08 mm., reaching to middle of sternum. Antennae: segment I, length .30 mm.; II, 1.61 mm., cylindrical, clothed with fine appressed pubescence; III, .55 mm.; IV, .36 mm.; black, segment II more brownish. Pronotum: length .93 mm. along median line, but 1.03 mm. laterad of median line, width at base 1.66 mm.; basal margin broadly sinuate to median line where a distinct notch is formed, also notched on anterior margin at middle of collar; disk with median line rather broadly but distinctly impressed or sulcate, more narrowly on collar; calli represented by triangular, smooth, black impressions which are rather widely separated by the convexity of the collar meeting with the convex disk. Scutellum deeply impressed on median line, dividing the convex disk into equal parts, mesoscutum rather broadly exposed.

Clothed with flattened, scale-like pale pubescence, recumbent on hemelytra and venter but nearly erect on pronotum. Color yellowish to grayish, front of head, calli, impression on scutellum, sternum, coxae and femora,

¹Contribution from the Department of Zoology and Entomology, Iowa State College, Ames Iowa.

blackish; tibiae yellowish brown, but darker at base and apex; cuneus, apical area of corium and small spot on middle, fuscous to blackish. Membrane whitish, apical half with fuscous on median line; veins yellowish to fuscous, darker on apices of areoles. Surface above and beneath, more or less coated with white, flocculent, wax-like powder. Abdomen bulging somewhat, the sides visible from above.

Holotype: ♀ June 24, 1891, American Fork, Utah (E. A. Schwarz); U. S. National Museum collection. *Paratypes*: 2 ♀ ♀, June 22, topotypic. ♀, "Col." This is the species which was recorded as *villosa* Reut. by Uhler (Proc. Ent. Soc. Wash., ii, 1893, p. 372), and reported as captured on *Bigelovia* by Mr. Schwarz. This is a very distinct species in the character of the pubescence and form of the pronotum and scutellum.

Clivinema sulcata, n. sp.

Suggestive of *medialis* but differs in form of pronotum and scutellum, and in the prominent, erect, simple pubescence.

♀. Length 4.1 mm., width 1.5 mm. Head: width .80 mm., vertex .52 mm.; yellowish, two rather broad glabrous lines, one each side of frons, two spots on vertex, and basal vittae on tylus, blackish. Rostrum, length .92 mm., extending slightly beyond middle of sternum, yellowish to blackish. Antennae: segment I, length .24 mm.; II, 1.2 mm.; III, .56 mm.; IV, .41 mm.; yellowish to fuscous. Pronotum: length .86 mm. along median line, but .92 mm. laterad of median line, width at base 1.51 mm.; posterior half of disk more broadly sulcate on median line than in *medialis*, more distinctly gibbous each side; callar impressions hook-shaped, the shank of the hook extending to near anterior angle of collar. Scutellum with median line broadly impressed on basal half but not carried to apex as in *medialis*; mesoscutum somewhat exposed.

Clothed with prominent, erect, simple but decurved hairs much as in *villosa* Reut., equally prominent on pronotum, scutellum, and hemelytra. Color rather uniformly pale yellowish, cuneus fuscous, marks on head and the sternum blackish; femora with a linear series of fuscous spots on both anterior and posterior aspects. Membrane whitish, apical half with a brownish cloud; veins pale to yellowish, not blackish apically. Surface not coated with wax-like powder as occurs in some species. Fine reddish, setigerous points are apparent on pronotum.

Holotype: ♀ Feb. 21, 1897, Palm Springs, California (Hubbard); U. S. National Museum collection. *Paratypes*: ♂ 2 ♀, topotypic (Cornell University). The male is not fit for description.

Clivinema sinuata, n. sp.

Distinguished by the deeply sinuate basal margin of pronotum and the subconically convex scutellum.

♀. Length 4.2 mm., width 1.74 mm. Head: width .86 mm., vertex .50 mm.; a broad glabrous black line each side of frons, meeting above on vertex which is partly covered by the overhanging pronotal collar. Rostrum, length 1.08 mm., nearly attaining posterior margin of sternum, blackish. Antennae: segment I, length .33 mm.; II, 1.27 mm.; III,

broken; dark brownish black, segment II yellowish on middle. Pronotum: length 1.08 mm., width at base 1.7 mm.; basal margin strongly sinuate, rather broadly exposing the blackish mesoscutum; disk rather evenly convex but more sharply so just behind calli; median line of collar indicated by a slender black groove; calli represented by a hook-shaped, glabrous, impressed black line, connecting transversely to separate the collar from the disk proper. Scutellum subconically convex, attaining a greater height than the pronotal disk, the basal half sloping to the crest of the convexity as a nearly flat surface.

Pubescence nearly as in *sulcata* and *villosa*, somewhat longer on pronotum. Color pale yellowish, scutellum blackish, sternum and marks on venter black; legs nearly as in *sulcata*, but tibiae with a black line on dorsal aspect, more or less obsolete on apical half. Membrane pale, veins yellowish, black at apex of smaller areole. Surface practically devoid of wax-like secretions. Sides of venter somewhat bulging and visible from above.

Holotype: ♀ Feb. 21, 1897, Palm Springs, California (Hubbard); U. S. National Museum collection.

Clivinema fuscinervis, n. sp.

Allied to *fusca* Downes, but distinguished by the longer second antennal segment which is equal to or slightly greater (♂) than basal width of pronotum.

♂. Length 4.4 mm., width 1.63 mm. Head: width .93 mm., vertex .53 mm. Rostrum, length 1.2 mm., attaining posterior margin of sternum. Antennae: segment I, length .34 mm.; II, 1.54 mm., equal to or slightly greater than basal width of pronotum, cylindrical, equal in thickness to segment I; III, missing. Pronotum: length 1.03 mm., width at base 1.52 mm.; very similar to *fusca* but collar more strongly inflated immediately before and between calli, this portion in contact with the inflated disk which is so strongly arched that the impressed line connecting calli is largely obscured; collar with a fine, dark, slightly impressed, median longitudinal line, anterior margin very slightly yet perceptibly notched. Scutellum rather strongly and evenly convex, median line glabrous and distinctly impressed on basal half, also an impressed line sharply delimiting scutellum from mesoscutum; clothed with erect, recurved hairs which appear somewhat longer than on hemelytra.

Dorsum clothed with erect, simple, pale to golden pubescent hairs, each hair strongly recurved, the curved portion exhibiting a golden glitter in certain lights, longer on pronotum and scutellum. Coloration grayish to fuscous, ventral surface tinged with reddish, femora more distinctly reddish; tylus, pair of broad smooth marks on frons, sternum, and genital segment, black; hemelytra and scutellum rather uniformly grayish to fuscous, the pronotum lighter; membrane uniformly fuscous, veins blackish.

Holotype: ♂ July 31, 1920, Missoula, Montana (A. A. Nichol); author's collection.

The writer is indebted to Mr. W. Downes for the loan of a male specimen of *Clivinema fusca* Downes with which the above species has been com-

pared. Some critical measurements for this specimen of *fusca* are as follows:

♂. Length 4.4 mm.; width 1.7 mm. Head: width .89 mm., vertex .52 mm. Rostrum imbedded in glue. Antennae: segment I, length .32 mm., thickness .12 mm.; II, 1.26 mm., thickness .103 mm.; III, .50 mm., slender (.045 mm. thick); IV, .38 mm. Pronotum: length 1.09 mm., width at base 1.45 mm.

***Clivinema sericea*, n. sp.**

Distinguished by the fine short pubescence on hemelytra contrasted with the more prominent, sericeous, decurved hairs on pronotum, many hairs distinctly flattened.

♀. Length 3.9 mm., width 1.5 mm. Head: width .83 mm., vertex .55 mm.; with glabrous black lines much as in *sinuata*. Rostrum, length .95 mm., reaching to near posterior margin of sternum. Antennae: segment I, length .32 mm.; II, 1.15 mm.; III, .59 mm.; IV, .35 mm.; brownish black, segment II broadly yellowish on middle. Pronotum: length .98 mm., width at base 1.57 mm.; basal margin transverse for the width of scutellum, then obliquely angulate to the basal angles; collar only moderately convex, calli much as in *sinuata* but the connecting impressed line more easily seen from above since the disk is not so strongly convex. Scutellum not so strongly convex as in *sinuata*, with a triangular impression on median line at base. Pronotum and scutellum clothed with moderately long decurved hairs, many of which are somewhat flattened, sericeous and of golden yellow color. Pubescence of the hemelytra much shorter, although distinctly sericeous.

Color yellowish to dusky, scutellum dusky to fuscous; calli, glabrous marks on head, sternum, and coxae, fuscous to blackish. Femora with longitudinal series of small fuscous dots, tibiae fuscous on dorsal aspect. Membrane pale whitish, with a dusky or pale fuscous cloud extending behind larger areole to membrane margin, veins yellowish to dusky, dark fuscous at apex of areoles. Surface with a moderate amount of white, wax-like secretion on scutellum and pronotum, but thicker on sides of thorax.

Holotype: ♀ October 10, 1894, Las Cruces, New Mexico ("ISS"); U. S. National Museum collection. *Paratypes*: 3 ♀, taken with the type, "preying on *Orthezia*." The collector's name does not appear on the label but the "ISS" may refer to initials.

***Clivinema detecta*, n. sp.**

Distinguished from *villosa* Reut. by the more strongly inflated scutellum and by the fuscous marks on membrane.

♀. Length 4.4 mm., width 1.7 mm. Head: width .87 mm., vertex .55 mm. Rostrum, length 1.03 mm., reaching slightly beyond middle of sternum. Antennae: segment I, length .35 mm.; II, 1.26 mm.; III, .63 mm., IV, .42 mm.; brownish black, more brownish on middle of segment II. Pronotum: length 1.06 mm., width at base 1.63 mm.; basal margin

transverse for a width somewhat greater than base of scutellum, collar more strongly convex than in *sericea*, calli and anterior half of disk thickly covered with white wax-like secretion. Scutellum shaped much as in *villosa* but more strongly inflated, rather broadly impressed on median line at base, but the whole rising abruptly due to the inflated contour. Dorsum clothed with rather long, erect hairs which become decurved apically much as in *villosa*.

Color testaceous to fuscous, cuneus, legs, and ventral surface nearly black. Membrane white, veins yellowish, with apex and basal half of vein forming smaller areole blackish; apical half of membrane with a fuscous cloud each side, more or less confluent around apical margin. Sides of thorax and venter rather thickly incrustated with white wax-like secretion.

Holotype: ♀ August 1–15, 1916, Jemez Springs, New Mexico, alt. 6400 ft. (J. Woodgate); author's collection. *Paratype*: ♀, Arizona (Morrison lot); Cornell University collection. Another female is at hand from Lamar, Colorado, which may belong here, but it is so thickly incrustated with wax the characters are largely obscured.

Clivinema bonita, n. sp.

Allied to *detecta* but larger and darker colored; distinguished by the broader, but less inflated scutellum with very shallow impression on median line at base.

♀. Length 5 mm., width 1.8 mm. Head: width .90 mm., vertex .53 mm. Rostrum, length 1.26 mm., just attaining posterior margin of sternum. Antennae: segment I, length .40 mm.; II, 1.48 mm.; III, missing; brownish black. Pronotum: length 1.26 mm., width at base 1.83 mm.; disk more strongly convex behind calli than in *detecta*. Scutellum broader but not so strongly inflated as in *detecta*, median line with very shallow impression at base.

Dorsum thickly clothed with pale to dusky, erect, long hairs with decurved tips, having a softer appearance than in *detecta*. Color dark fuscous to black, pronotum more brownish, hemelytra with a pale ground color over which the fuscous has become dominant. Membrane and veins nearly as in *detecta*, but the vein about smaller areole entirely black. Ventral surface, pronotum and scutellum thickly coated with white wax-like secretion.

Holotype: ♀ July 16, 1917, Post Creek Canyon, alt. 6500 ft., Bonita, Arizona (H. H. Knight); author's collection. Evidently scarce since considerable sweeping of all vegetation about the spot failed to reveal another specimen.

KEY TO THE SPECIES OF CLIVINEMA.

1. Body bright red, hemelytra, antennae and tibiae black.....
regalis Kngt.
- Otherwise colored.....2
2. Pronotum strongly sulcated along median line, slightly notched at basal and anterior margins.....3

- Pronotum not distinctly sulcated or notched on median line.....4
3. Dorsum clothed with short, thick, recumbent, almost scale-like pubescence; scutellum deeply sulcated along median line for its full length; membrane white, apical half with a distinct median fuscous vitta*medialis* n. sp.
 Dorsum clothed with simple, erect, usually decurved hairs, scutellum broadly sulcated on basal half only; membrane more broadly infuscated on apical half.....*sulcata* n. sp.
4. Pronotum with basal margin transverse on middle third, or only very slightly sinuate.....5
 Pronotum with basal margin deeply sinuate on middle third; scutellum more strongly convex on posterior half, subconically produced.....*sinuata* n. sp.
5. Membrane more or less infuscated on apical half.....6
 Membrane uniformly whitish, not distinctly infuscated on apical half; scutellum evenly convex, with a short and rather narrow impression on median line at base.....*villosa* Reut.
6. Veins of membrane uniformly blackish.....7
 Veins of membrane not uniformly blackish, distinctly paler around larger areole.....8
7. Antennal segment II not equal to width of pronotum at base (σ).....*fusca* Downes.
 Antennal segment II equal to width of pronotum at base (σ).....*fuscinervis* n. sp.
8. Pubescence on the dorsum long, erect, each hair decurved apically, not distinctly shorter on hemelytra than on pronotum, not distinctly sericeous or flattened9
 Pubescence on hemelytra short, distinctly shorter than on pronotum, more or less sericeous, many hairs distinctly flattened....*sericea* n. sp.
9. Scutellum with a broad depression on median line at base; second antennal segment not equal to width of head plus width of vertex.....*detecta* n. sp.
 Scutellum scarcely impressed on median line at base; second antennal segment equal to or slightly greater than width of head plus width of vertex.....*bonita* n. sp.

Of the ten species of *Clivinema* treated in the present paper, the male is known for four species only; and judging by these the genital characters appear to be largely of generic distinction, hence not so useful for separating the species. It is of interest to note that the male claspers are remarkably similar to those found in the genus *Largidea* Van D. However, good characters for distinguishing the species have been found in the form of the scutellum and pronotum, the type of pubescence, and in membrane colors.

Very little is known regarding the habits of the different species of *Clivinema*, although collecting records indicate that some members must be predacious, one on *Orthezia*, and others probably on mealy bugs and related insects. The general scarcity of specimens is also a good indication of predacious habits of the species.